

**REMARKS**

Claims 1-7 and 9-13 are pending in the application. Claims 8 and 14 have been canceled herein. Favorable reconsideration of the application, as amended, is respectfully requested.

Applicants thank the Examiner for the continued careful examination of the application.

**I. ALLOWABLE SUBJECT MATTER**

Applicants acknowledge with appreciation the allowance of claims 9-13.

**II. REJECTION OF CLAIMS 8 AND 14 UNDER 35 USC §101**

The Examiner continues to reject claims 8 and 14 under 35 USC §101 as representing non-statutory subject matter.

Applicants do not agree with the rejection for the reasons previously stated. Nevertheless, in the interest of expediting favorable prosecution, applicants herein cancel claims 8 and 14 without prejudice or disclaimer.

Applicants respectfully request withdrawal of the rejection.

**II. REJECTIONS OF CLAIMS 1-8 AND 14 UNDER 35 USC §112, 1<sup>st</sup> AND 2<sup>nd</sup> ¶¶**

Claims 1-7 stand rejected under 35 USC §112, first paragraph, as containing subject matter which was not described in the specification. Claims 1-8 and 14 stand rejected under 35 USC §112, second paragraph, as being indefinite.

Regarding claims 1-7, the Examiner questions what is meant by a “state-type modulation rule”? The Examiner indicates that it is not clear from the specification what exactly is a “state-type modulation rule”. The Examiner thus concludes it is not clear how a “state-type modulation rule” and a “digital sum value” are interchangeable as recited in the claims.

Applicants respectfully submit that what is meant by “state-type modulation rule” as recited in the claims is sufficiently clear to those having ordinary skill in the art. Nevertheless, in order to expedite favorable prosecution applicants have amended claims 1 and 7 herein to define more fully what is meant by “state-type modulation rule”.

Specifically, applicants have amended claims 1 and 7 to refer to “a state-type modulation rule which may be represented by a conversion table including a current state field, a current data symbol field, a converted data symbol field, and a next state field, wherein for a given current state and current data symbol, there is a corresponding converted data symbol and corresponding next state”. As is disclosed in Figs. 9A and 9B of the present application, together with the description at page 16, lines 3-13, for example, state-type modulation utilizes a conversion table including sub tables corresponding to each state (e.g., state 1 thru state 4). The four sub tables each include a code word and a next state for each data symbol. The code word represents the code word which is to be selected when the current data symbol is converted. The next state represents the state which is to be selected when the next data symbol is converted. The next state defines the next state to which the conversion is to transition.

Consequently, applicants respectfully submit that claims 1 and 7 are fully supported by the original specification and clearly define the features of the invention.

Further, applicants note that state-type modulation which may be represented by conversion tables is readily understood by those having ordinary skill in the art. Moreover, the distinctions between modulation rules that use digital sum value and

state-type modulation rules are known. As is exemplified from the following excerpts from US 5,917,857:

**DSV:**

*The transition code is selected such that, in addition to satisfying the code sequence constraint, the absolute value of the digital sum variation (DSV) is reduced to minimize the low frequency component of the channel signal, i.e., the NRZI signal SNRZI. Note that the DSV is accumulated from the beginning of the binary bit sequence where the bits of one bit state have a value of +1 and the bits of the other state have a value of -1. (US 5,917,857, Col. 2, Ins. 5-12).*

**State-Type Modulation:**

*Whereas EFM conversion uses a single static conversion table, EFMplus conversion selects one conversion table from several available conversion tables according to specific rules each time a data word is presented for conversion, and uses the selected conversion table to convert the data word to a code word. Note that the use of a specified single conversion table is called a "state" corresponding to that conversion table. (US 5,917,857, Col. 2, Ins. 40-47).*

Regarding claims 2 and 3, the Examiner indicates that it is confusing how “state-type modulation rule” and “a digital sum value” are equivalent and can be replaced with another. More specifically, the Examiner indicates again that it is unclear what is a “state-type modulation rule”.

For the reasons described above, applicants believe it should be readily apparent from claims 1 and 7 exactly what a “state-type modulation rule” is.

Further, it is important to note that the Examiner may have misunderstood claims 1-8 and 14 in that the claims do not recite that “state-type modulation rule” and “a digital sum value” are equivalent. A prescribed modulation rule may be a state-type modulation rule, a modulation rule that uses a DSV, or a state-type modulation rule that also uses a DSV (see, e.g., Spec., p. 13, Ins. 1-11). That is, although a state-type modulation and a modulation rule which uses a DSV are different, they are not necessarily mutually exclusive, and can be combined together as in 8/16 modulation. (e.g., Spec., p. 22, Ins. 18-21).

In view of the above clarification and amendments, applicants respectfully submit that claims 1-7 clearly define the invention and are in fact supported by the original application. Withdrawal of the rejections is respectfully requested.

***III. CONCLUSION***

Accordingly, all claims 1-7 and 9-13 are believed to be allowable and the application is believed to be in condition for allowance. A prompt action to such end is earnestly solicited.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should a petition for an extension of time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

/Mark D. Saralino/

Mark D. Saralino  
Reg. No. 34,243

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The Keith Building  
1621 Euclid Avenue  
Nineteenth Floor  
Cleveland, Ohio 44115  
(216) 621-1113